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A STUDY OF VARIOUS FACTORS RELATED TO SUCCESS IN COLLEGE GENERAL MATHEMATICS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Education

in

The Department of Education

by
Francis Gary Fournet, Jr.
B.S., Northwestern State College, 1943
M.S., Louisiana State University, 1950
August, 1963

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ABSTRACT

The purpose of this study was to determine whether or not certain selected measurable factors were related to success in college general mathematics.

The group of students enrolled in Mathematics 121 at Southeastern Louisiana College in the fall of 1961 was the total population under consideration. This group consisted of six hundred forty-six students. Of primary interest in the study were those freshmen students who were taking Mathematics 121 for the first time as their first college mathematics course. Seventy-one students, or approximately 11 per cent of the total Mathematics 121 enrollees, were either upperclassmen or were repeating the course. Ninety-seven students, or 15 per cent of the total Mathematics 121 enrollees, withdrew from the course before earning a semester grade. Thus, the group that was studied constituted 74 per cent of all the students who originally enrolled in Mathematics 121 in the fall of 1961.

Sixteen variables were considered in the study. Ten of these were, for statistical purposes, regarded as continuous. These ten variables are listed below:

1. The Mathematics 121 semester grade.

2. The American Council on Education Examination score.
3. The score on the Cooperative Mathematics Pretest for College Students.
4. The score on the New Purdue Placement Test in English.
5. The overall grade-point average at Southeastern Louisiana College in the fall of 1961.
6. The overall grade-point average in high school.
7. The grade-point average in high school mathematics.
8. The grade-point average in high school English.
9. The Mathematics 121 final examination score.
10. Age.

Correlation coefficients for all pairs of the above ten variables were computed. A tabular summary of these coefficients is shown below:

		VARIABLES								
		2	3	4	5	6	7	8	9	10
VARIABLES	1	.517	.588	.183	.785	.519	.540	.453	.901	-.055
	2		.485	.349	.479	.298	.262	.324	.501	.039
	3			.247	.461	.353	.400	.360	.599	-.153
	4				.260	.241	.219	.291	.185	-.023
	5					.605	.593	.563	.764	-.037
	6						.818	.830	.518	-.184
	7							.655	.523	-.074
	8								.472	-.193
	9									-.064

Six of the variables were considered to be discrete. A Chi-square analysis was computed for each of these with respect to the Mathematics 121 semester grade. The variables which were regarded as discrete are listed below:

1. Achievement in freshman English at Southeastern Louisiana College in the fall of 1961.
2. The high school mathematics course pattern selected.
3. Sex.
4. The college mathematics instructor.
5. The size of the high school attended.
6. The curriculum followed.

The conclusions of this study are:

1. The expectation for success in general college mathematics at Southeastern Louisiana College for freshmen students who enroll in Mathematics 121 is low. The probability of making at least a C is less than .50.

2. Success in general mathematics is closely related to general academic success during the first semester in college.

3. Success in general mathematics in college is closely related to success in freshman English.

4. Students who chose at least three years of "college preparatory" mathematics in high school were significantly more successful in general college mathematics than those who chose less than three years.

5. Achievement in general college mathematics is closely related to general academic success in high school.

6. Achievement in general college mathematics is closely related to success in high school English.

7. Achievement in general college mathematics is closely related to success in high school mathematics.

8. In general, the grade-point average in high school mathematics is much higher than the grade-point average in general college mathematics.

9. Mathematics placement tests and the American Council on Education Psychological Examination are predictive of success in general college mathematics.

10. The size of the high school attended does not appear to significantly affect the student's chances in general college mathematics.

11. The choice of college mathematics instructor does not seem to affect the student's chances in Mathematics 121.

12. Girls seem to do somewhat better than boys in general college mathematics. One must recognize, however, the fact that a great many of the mathematically competent male students choose curricula which do not include general mathematics.

CHAPTER I

THE PROBLEM AND REVIEW OF THE RELATED LITERATURE

I. INTRODUCTION

This study was concerned with achievement in general mathematics for college freshmen. Measurable factors related to success in this subject were sought.

The problem of the effectiveness of general mathematics courses for college freshmen is a source of widespread concern among educators. There is considerable evidence that the majority of the students are not achieving the knowledge, skills, and appreciations included in the aims. The high failure rates in this subject have been viewed with alarm. A large number of students exhibit inordinate fear and even antagonism toward the subject. With the rapid increase in college enrollment and the simultaneous shortage of trained teachers, the problem appears to be getting worse.

If large numbers of students leave college failing to understand the nature of mathematics or with an unhealthy attitude toward it, the effect on future generations can be quite serious. This is especially

evident when one notes the ever-increasing applications of mathematics in the physical, biological, and behavioral sciences. Parents and teachers who are ignorant of and antagonistic toward mathematics may transmit these characteristics to children.

A goal of college mathematics is to provide, at the freshman level, a carefully selected course of study which is properly articulated and designed to meet the needs and abilities of the students. This can be accomplished only through a systematic study of all aspects of the problem.

II. STATEMENT OF THE PROBLEM

The purpose of this research was to study the relationships, if any, between achievement in general mathematics in college and certain selected factors.

III. IMPORTANCE OF THE STUDY

Mathematics 121 in the fall of 1961 was the only mathematics course at Southeastern Louisiana College which was in all the curricula except those leading to a major in mathematics or one of the physical sciences. Understandings, skills, and appreciations derived from this subject constituted the common background in mathematics for the vast majority of Southeastern Louisiana

College graduates. Future teachers, future research workers in the social sciences, and future parents had to depend on this course to furnish many of the mathematical concepts needed in their lives. Thus, the importance of this course in the curriculum structure must not be underestimated.

Reliable estimates based on informal studies at Southeastern Louisiana College revealed that only 40 per cent of the students who enrolled in Mathematics 121 completed the course with a grade of C or better.

The writer felt that if there existed certain factors related to success in general freshman mathematics, it was important that educators identify them. Moreover, if such related factors could be identified, it was important to know the degree of their correlation with success in freshman mathematics.

IV. DELIMITATIONS OF THE STUDY

The study was limited to freshmen students enrolled in Mathematics 121 at Southeastern Louisiana College in the fall of 1961. Those students taking Mathematics 121 for the first time as their first college mathematics course received major consideration in the study.

V. SUMMARY OF RELATED STUDIES

The number of studies related to college achievement

is so numerous that it would be impossible to summarize all of them. The summary is a representative survey of the literature dealing with college achievement with emphasis on success in freshman mathematics.

Douglass and Michaelson found that the average marks in high school mathematics had a definite correlation with the average college mark in every field. They also found that in predicting success in elementary college mathematics the average grade in high school mathematics and the overall high school average were of approximately equal merit. Their study included three hundred eighty-seven freshman students at the University of Oregon in 1930. The correlation coefficients relating success in freshman mathematics to high school marks in mathematics and to overall average high school marks were .47 and .46 respectively.[1]

Scott and Gill found that the number of units earned in high school mathematics and the number of years intervening between the last year of high school mathematics and the first year of college were related to success in freshman mathematics. Of the two factors, the number of units earned in high school mathematics was much

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[1]H. R. Douglass and J. H. Michaelson, "The Relation of High School Mathematics to College marks and of Other Factors to College Marks in Mathematics," School Review, 44:616, October, 1936.

more important.[2]

Kossack states that of the different factors he considered for determining probable success in a first course in college mathematics, the two most important were the students' grades on a placement or training test and their grades in high school mathematics.[3]

Nichols found that the best single predictor of success in ninth grade algebra was the eighth grade mark in mathematics. The correlation coefficient relating ninth grade algebra scores to eighth grade mathematics scores was .588. He studied one hundred ninety-two students having six different algebra teachers in Florida. The next most important factor he found was the grade equivalent in arithmetic determined by an achievement test given during the seventh grade. The grade equivalent on the reading part of the achievement test did not correlate strongly with the algebra grade. The intelligence quotient raw score determined in the eighth grade when considered in relation to success with ninth grade algebra produced a correlation coefficient of .374.[4]

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[2]W. M. Scott and J. P. Gill, "A Prediction of Pupil Success in College Algebra," The Mathematics Teacher, 34:358, December, 1941.

[3]C. F. Kossack, "Mathematics Placement at the University of Oregon," The American Mathematical Monthly, 49:234-37, April, 1942.

[4]Eugene D. Nichols, "Predicting Student's Success in First-year Algebra," The Mathematics Teacher, 55:651-53, December, 1962.

Scannell found that the best single predictor of college success was the high school grade point average. The correlation coefficient of this factor with success in the freshman year was found to be .67. The correlation of high school grade point average with success over the entire four years of college was .57. Scannell's study included three thousand two hundred two students who had taken the Iowa Tests of Educational Development during the four year period from 1948 to 1952. The students were enrolled at the State University of Iowa or Iowa State College. He found that rank in class was not an important factor in his efforts to predict general success in college. Grade point averages in high school seemed more highly predictive for girls than for boys. The correlation coefficients were .683 for girls and .648 for boys. The size of the high school attended is important when using grades to predict success in college, especially if the high school student body numbered more than two hundred.[5]

West and Fruchter found that students who studied mathematics and foreign languages in high school earned higher grades in these same areas in college. They found

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[5]D. P. Scannell, "Prediction of College Success from Elementary and Secondary School Performance," Journal of Educational Psychology, 51:130-4, June, 1960.

that the girls in the study scored significantly higher on the California Test of Mental Maturity than did the boys. They also found that the girls had a higher grade point average in college exclusive of mathematics. On the other hand, the boys had a significantly higher average in college mathematics than did the girls.[6]

Cook and Martenson conducted a study to determine the relationship between certain high school course work and achievement in college. They concluded that the study of particular courses in high school has little relation to college grades except for specialized programs such as engineering.[7]

Adams conducted a study to determine various factors related to success in college physics. He found little relation between the study of high school physics and success in college physics. He also concluded that the average high school marks in all subjects told more about probable success in college physics than did entrance test ranks. The factor that seemed most highly related

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[6]J. V. West and B. Fruchter, "Longitudinal Study of the Relationship of High School Mathematics Study to Freshman Grades," Journal of Educational Research, 54:105-10, November, 1960.

[7]D. R. Cook and W. D. Martenson, "Relationship of Certain Course Work in High School to Achievement in College," Personnel and Guidance Journal, 40:703-7, April, 1962.

to success in college physics of all those studied was college mathematics. He found a coefficient of correlation of .435 relating college physics and mathematics 1-2.[8]

Douglass and Michaelson found that the percentile rank of the American Council on Education test with respect to success in college mathematics yielded a coefficient of correlation of .26.[9]

Jones used a Chi-square analysis to show that the relationship between point-hour ratios and the American Council on Education test scores for freshmen students entering Southeastern Louisiana College in 1959 was significant at the .01 level. He also found that the relationship between the Cooperative entrance examination in mathematics and the Mathematics 121 was significant at the .01 level.[10]

Held claims that the failure rate of freshmen in

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[8]Sam Adams, "A Study of Various Factors Related to Success in College Physics," (unpublished Doctor's dissertation, Louisiana State University, Baton Rouge, 1951), p. 84.

[9]H. R. Douglass and J. H. Michaelson, "The Relation of High School Mathematics to College Marks and of Other Factors to College Marks in Mathematics," School Review, 44:616-19, October, 1936.

[10]Lyman L. Jones, "Relationship Between Mathematics Placement Scores and Grades In Mathematics 121," (unpublished research, Southeastern Louisiana College, Hammond, 1959).

mathematics can be reduced from 21 per cent to 6 per cent by sectioning students on the basis of placement test scores.[11]

Lawrence found that the score on the psychological examination and rank in the graduating class in high school were both significantly related to success in college.[12]

Keller and Jonah found that a test given after a review of fundamentals of algebra gave an unusually high correlation coefficient when computed relative to success in college algebra. Their investigation showed a correlation coefficient of .731 with a critical ratio of 3.32. A critical ratio of 1.96 is regarded as significant and one of 2.58 is regarded as highly significant. Hence, this result seems to be unusually significant statistically.[13]

Eagle studied the relationship of results of the

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[11] O. C. Held, "A College Mathematics Placement Test," Journal of Higher Education, 13:39-40, January, 1942.

[12] W. A. Lawrence, "An Evaluation of Achievement in the Various Colleges of Louisiana State University with Special Reference to Certain Aspects of the Junior Division," (unpublished Doctor's dissertation, Louisiana State University, Baton Rouge, 1940), p. 129-30.

[13] M. W. Keller and H. F. S. Jonah, "Measures for Predicting Success in a First Course in College Mathematics," The Mathematics Teacher, 41:350-5, December, 1948.

Otis Test of Mental Ability to success in algebra and general mathematics. The various aspects of the test correlated with algebra more highly than with general mathematics with the exceptions of those sections of the test which measured reading speed and mathematics vocabulary. The reading speed correlated more highly with general mathematics than with algebra, and the mathematics vocabulary was essentially the same for both subjects.[14]

Ryan studied the relationship between intelligence quotient and success in general mathematics. She found a high correlation between mathematics ability and intelligence quotient in the upper quartile range of grades in general mathematics. This correlation coefficient diminished in the second and third quartiles. In the first quartile she found r= $.80 \pm .11$; in the second and third quartiles she found r= $.40 \pm .29$. From this study it appears that the intelligence quotient is more predictive of success in general mathematics for upper quartile students.[15]

Bromley and Carter administered the Cooperative

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[14]Edwin Eagle, "The Relationships of Certain Reading Abilities to Success in Mathematics," The Mathematics Teacher, 41:175-7, April, 1948.

[15]Sister Mary Miriam Ryan, R. S. M., "Intercorrelations in Native Capacity and Accomplishments in Mathematics Courses," School and Society, 70:183-6, September, 1949.

General Achievement and the American Council on Education tests to three hundred ninety-seven students at the University of Illinois in 1948 in an attempt to determine a regression equation which would predict success in freshman mathematics. The resulting equation was $P = .016A+.012Q+.031R$, where P is the index of success in freshman mathematics, A is the mathematics comprehension, Q is the quantative score on the American Council on Education test, and R is the rank in the high school class. It will be noted that rank in the high school graduating class is the most important variable in the equation. The correlation coefficients of A, Q, and R with P were .32, .28, and .40, respectively.[16]

Pitts used the Davis Test of Functional Competence in Mathematics and the Iowa Silent Reading Test in an effort to correlate reading ability with functional competence in mathematics. He found that the correlation coefficient was high ($r = .53$) and that it was significant at the .01 level.[17]

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[16]Anne Bromley and Gerald C. Carter, "Predictability of Success in Mathematics," Journal of Educational Research, 44:148-50, October, 1950.

[17]Raymond J. Pitts, "Relationship Between Functional Competence in Mathematics and Reading Grade Levels, Mental Ability, and Age," Journal of Educational Psychology, 43:486-92, December, 1952.

Barret studied the relationship of the American Council on Education test scores to success in college mathematics. She found that the quantitative section (Q) correlated more highly with success in college mathematics than the language section (L). The American Council on Education Psychological Examination total (T) was found not to be significantly correlated with the Q section of the test. She concluded that, despite the high correlation between the ACE-Q and success in college mathematics, this test should not be used alone as a differential predictor of success in college mathematics.[18]

Seigle attempted to determine factors which would enable one to predict success in college mathematics at Washburn University. The Washburn entrance examination was found to be the best single predictor. Seigle also found that the number of units earned in high school mathematics and the general grade point average earned in high school yielded a high correlation with success in college mathematics. When correlated with success in college mathematics the number of units earned in high school mathematics gave r=.801 and the high school grade

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[18]Dorothy M. Barret, "Differential Value of Q and L Scores on the ACE Psychological Examination for Predicting Achievement in College Mathematics," Journal of Educational Psychology, 33:207, April, 1952.

point average gave r=.757.[19]

Jackson studied three thousand fifty-three freshmen students at Michigan State College in an effort to find factors upon which to base predictions of success in the freshman year of college. The reading examination was found to be the best single predictor of success in the freshman year of college. He found that the results of the Arithmetic Proficiency Test correlated highly with success of college freshmen. Women made significantly higher grades than men during the freshman year. Jackson also concluded that women perform more in accord with measured abilities than did men students.[20]

Brown studied one thousand six hundred nineteen students from twenty-seven high schools in southeast Louisiana to determine training factors related to functional competence in mathematics. The proficiency index of a group with respect to an item on the Davis Test of Functional Competence in Mathematics was defined to be the percentage of that group which got the item correct. A group was considered functionally competent

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[19]William F. Seigle, "Prediction of Success in College Mathematics at Washburn University," Journal of Educational Research, 47:577-88, April, 1954.

[20]R. A. Jackson, "Prediction of Success of College Freshmen," Journal of Educational Psychology, 46:296-301, May, 1955.

with respect to an item if 67 per cent of the group got the item correct. Brown found that the proficiency index was related to the number of years mathematics was taken and to the course patterns selected by the students. In general, the proficiency indexes increased as the number of years of mathematics taken increased. The so-called "college-preparatory" course pattern consisting of Algebra I, Algebra II, plane geometry, trigonometry and solid geometry produced a proficiency index of 54.8 while the two year pattern of Algebra I and plane geometry gave an index of 29.6.[21]

Renner conducted a study to determine if there was a difference in functional competence between students who studied only algebra before the senior year and those who studied only general mathematics. He tested functional competence with the Davis Test of Functional Competence in Mathematics. He concluded that two semesters of general mathematics was not as valuable as two semesters of algebra for functional competence. Thus, Renner seems to agree with Brown that the courses selected are related to competence in mathematics as measured by the Davis Test

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[21]Robert Carl Brown, "Functional Competence in Mathematics of Louisiana High School Seniors," (unpublished Doctor's dissertation, George Peabody College for Teachers, Nashville, 1956), p. 65.

of Functional Competence in Mathematics.[22]

Beamer conducted a study to determine whether aptitude factors G (intelligence), V (verbal), N (numerical), S (spatial), P (perception), and Q (clerical) of the General Aptitude Test Battery (GATB Form B-1001) can discriminate between students in selected major fields of study at North Texas State College. He concluded that all except the P factor can be used as an aid in counseling.[23]

Marcher conducted an empirical study to determine the relationship, if any, between performance in college mathematics and performance on selected entrance examinations. He concluded that the distribution of letter grades was inconsistent with the percentile rank position on the entrance examination. High ranking scores on the entrance examination were often accompanied by "C" grades and frequently by failure. He also noted that moderate success in mathematics can be expected from the lower ranges as well as the middle and upper ranges of the

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[22]J. W. Renner, "Student Achievement of Functional Competence Three Years after Completing Algebra or General Mathematics," The Mathematics Teacher, 50:160-1, February, 1956.

[23]George C. Beamer, "Aptitude Batteries for Selected Major Fields of Study," Personnel and Guidance Journal, 38:43-5, September, 1959.

entrance examination.[24]

Weeks administered the American Council on Education Psychological Examination (ACE) and the School and College Ability Test (SCAT) to one hundred twenty-two full time freshman students at Eastern Michigan University in an effort to determine their respective predictive abilities with respect to success in the freshman year of college. The results of his study are recorded in the table below:

TEST	CORRELATION WITH COLLEGE AVERAGE
ACE Linguistic	.28*
ACE Quantative	.02
ACE Total	.19
SCAT Verbal	.36*
SCAT Quantative	.33*
SCAT Total	.42*
High School Average	.44*

*Significant at the .01 level.

It will be noted that of the factors investigated the one which had the highest correlation with success in the college freshman year was the high school grade point

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[24]Joseph Marcher, "An Empirical Study of Performance in Mathematics and Performance in Selected Entrance Examinations," Journal of Educational Research, 53:181-7, January, 1960.

average. The SCAT Total was essentially as predictive as the high school grade point average according to this study.[25]

Corotto found that both the American Council on Education Psychological Examination and a locally constructed screening test would distinguish at a significant level between potentially successful and potentially unsuccessful students in a first year mathematics course at the University of Houston. The locally constructed screening test proved to be better than the American Council on Education Psychological Examination.[26]

Barnes and Asher made a study of ten different factors in an effort to predict success in first-year algebra. Of the factors studied, the best single predictor of success in algebra was the eighth grade mathematics grade. This correlation coefficient was .5881. The least important factor was the grade equivalent on the reading part of the achievement test given during the eighth grade. The correlation coefficient for this variable was .273. Other factors, in order of importance,

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[25]J. S. Weeks, "The Predictive Validity of ACE and SCAT," Personnel and Guidance Journal, 38:52-4, September, 1959.

[26]Loren Vincent Corotto, "The Teaching of Mathematics at the College and University Level," Review of Educational Research, 31:315, June, 1961.

after the eighth grade mathematics mark were grade equivalent in arithmetic taken in the seventh grade, seventh grade arithmetic mark, raw score in algebra prognostic test, grade equivalent in arithmetic taken in the eighth grade, eighth grade reading grade, seventh grade reading grade, raw score on IQ test taken in the eighth grade, and the grade equivalent in reading taken in the seventh grade. The regression equation which resulted from this study was: $X_1 = .5094X_3 + .0247X_7 - 1.3120$, where X_3 is the eighth-grade mathematics grade and X_7 is the grade equivalent on arithmetic, total score, part of the achievement test given during the seventh grade. It will be noted that these variables are not equally weighted. Indeed, the weighting is approximately 25 to 1 in favor of the grade made in mathematics the previous year.[27]

Several studies have been made in an effort to determine what relationship exists between achievement in mathematics and the student's reaction to the subject. One such study was made by Dreger and Aiken. This study included a population of seven hundred four college students. These students were given the Taylor Manifest

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[27]Ward Ewing Barnes and John William Asher, "Predicting Student's Success in First-year Algebra," The Mathematics Teacher, 55:652-3, December, 1962.

Anxiety Scale at the close of a test in mathematics. The number anxiety scores as determined by this test were correlated with general anxiety and with the mathematics grades. Dreger and Aiken came to the following conclusions as a result of their research:

1. Number anxiety is separate from general anxiety.
2. Number anxiety is not related to intelligence.
3. The correlation of number anxiety and mathematics scores was negative. (r=-.51).[28]

Doffenberger and Norton of the University of California conducted a study to determine factors involved in the formation of attitudes toward mathematics. The population in the study included both male and female students who were in the top 12 per cent of their high school graduating classes and who were in the top 86 per cent on the American Council on Education test. Only 3 per cent of the group had less than a "C" average in mathematics. Two groups were formed from the population. The group whose members liked mathematics was designated the positive group, and the group whose members disliked mathematics was designated the negative group. The two groups had the same general attitudes toward school, their

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[28]R. M. Dreger and L. R. Aiken, "The Identification of Number Anxiety in a College Population," Journal of Educational Psychology, 48:344-52, October, 1957.

parents, and toward their concepts of what constituted happiness. Doffenberger and Norton came to the following conclusions:

1. The parents of the members of the positive group expected higher achievement in mathematics from their children than did the parents of members of the negative group.
2. The negative group disliked algebra even when they liked the teacher. The positive group displayed a closer relationship between liking the subject and liking the teacher.
3. The present lack of interest in mathematics is a cultural phenomenon pervading not only the educational system but also the family as an institution.[29]

Krathwohl conducted a study to determine the relative contributions of aptitude and work habits to achievement in college mathematics and college English. He concluded that when the group is taken as a whole, the predictions for achievement are independent of work habits. On the other hand, he found that more accurate predictions for achievement in college mathematics and English were possible when the population is divided into industrious, normal, and indolent sub-groups.[30]

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[29]Thomas Doffenberger and Donald Norton, "Factors in the Formation of Attitudes Toward Mathematics," Journal of Educational Research, 52:171-6, January, 1959.

[30]W. C. Krathwohl, "Relative Contributions of Aptitude and Work Habits to Achievement in College Mathematics," Journal of Educational Psychology, 44:140-8, March, 1953.

Cristantiello conducted a study to determine the relationship between a student's attitude toward mathematics and the predictive validity of a measure of quantative aptitude. He found that the quantitative portion of the American Council on Education test was predictive for only the middle or neutral group. In other words he concluded that this quantative measure was not predictive for those whose attitude towards mathematics was very good or those whose attitude was very bad. For the middle group the measure was predictive at the .05 level of significance.[31]

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[31] Philip D. Cristantiello, "Attitude Toward Mathematics and the Predictive Validity of a Measure of Quantative Aptitude," Journal of Educational Research, 55:185-6, December, 1961

CHAPTER II

SOURCES OF DATA AND TREATMENT OF DATA

I. INTRODUCTION

The nature of the freshman general mathematics taught at Southeastern Louisiana College in the fall of 1961. Mathematics 121 was called "Introductory College Mathematics" and was a required course in all the curricula not leading to an academic major in technical fields. It represented an attempt on the part of the mathematics department to design a course which combines the best features of the "new" and the "traditional" mathematics. In general, the course structure placed emphasis on understanding concepts rather than on manipulative skills.

The course content was drawn almost entirely from a text written by Banks.[1] Five units were covered in such a way that each was given approximately equal time. The first unit treated number systems. Ancient as well as modern systems were covered, and number bases other than base ten were given extensive coverage. The second unit

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[1] J. Houston Banks, Elements of Mathematics (Boston: Allyn and Bacon, Incorporated, 1957), 422 pp.

covered number properties. The idea of set and the axiomatic basis of our number system were covered. Number congruences were given strong treatment in this unit. The third unit dealt exclusively with mathematical proof. The nature of mathematical proof was the chief consideration. The students were not expected to become competent in constructing logical proofs, but they were expected to be able to recognize valid and invalid arguments. Deductive and inductive proofs were displayed so that students could understand these concepts. The language of mathematical logic was treated in some detail. Students were expected to understand the meaning of such terms as validity, converse, contrapositive, necessary conditions, sufficient conditions, and others used commonly in logical systems. The fourth unit dealt with integers, rational numbers, inequalities, and linear equations. Exponents, coordinate systems, and systems of equations comprised the fifth unit.

The teachers who taught Mathematics 121 made strong efforts to standardize the course both with reference to course content and to the time spent on the various topics. A general course outline was followed closely so that each section was ready for a unit test at about the same time. The unit tests were constructed individually by the teachers of each section. The final

test was an objective test constructed by a departmental committee consisting of teachers of the course. The final grade was based on four unit tests and the final examination. Of the five unit tests each student took, only four were used to determine the grade. In each case the lowest unit test grade was ignored in computing the average. It was felt by the majority of the departmental faculty members that this would be a fair way of eliminating the possibility of a student's grade being too greatly affected by one poor test result. The final examination grade constituted 30 per cent of the final mark, and the unit test average counted for the remaining 70 per cent.

II. SOURCES OF DATA

The three major sources of data were the files of the Registrar's office, the files in the office of the Director of Testing, and the records of the instructors. The personal data on each student and his academic record at Southeastern were taken directly from transcripts and other records in the Registrar's office. High school averages and other data were taken from the high school transcripts. Standardized test scores were taken from the records in the Office of the Director of Testing. The final test scores were obtained from records kept by the instructors. Information on the

sizes of high schools was obtained from Bulletin 923 published by the State Department of Education.[2]

III. TREATMENT OF DATA

A list of all students originally enrolled in each section of Mathematics 121 in the fall of 1961 was obtained from the instructors. A 5x8 inch card was made out for each student and the data were recorded on these cards. When all the data were collected, they were coded and placed on IBM sheets. A set of instructions was written and the data were processed by the computer center at Louisiana State University.

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[2]Shelby M. Jackson, Louisiana School Directory, State Department of Education of Louisiana, Bulletin 923, October, 1960.

CHAPTER III

PRESENTATION OF DATA

I. THE POPULATION UNDER STUDY

The total population of students enrolled in Mathematics 121 at Southeastern Louisiana College in the fall of 1961 is denoted by the letter T. The set T consisted of six hundred forty-six students and was divided into three subsets denoted by W, U, and S. The set W consisted of all those students who withdrew from Mathematics 121 before earning a final mark. The set U consisted of all those students who did not withdraw and who were either upperclassmen or were repeaters of Mathematics 121. The set S consisted of those freshmen students who completed the course and who were enrolled in Mathematics 121 as their first experience in college mathematics. The set W consisted of ninety-seven students or 15.0 per cent of the total original enrollment in Mathematics 121. The set U consisted of seventy-one students which was 11.0 per cent of the total population, T. The set S consisted of four hundred seventy-eight students or 74.0 per cent of the total population, T.

The set S received primary consideration in this study. It will be noted that 26 per cent of the total

population T was excluded from this study either because these students withdrew or because they were upperclassmen or were repeating Mathematics 121. The distribution of semester grades in Mathematics 121 for the sets described above is shown in Table I.

TABLE I

DISTRIBUTION OF MATHEMATICS 121 GRADES AT SOUTHEASTERN LOUISIANA COLLEGE IN THE FALL OF 1961

	Set					
	T		U		S	
Grade	Number	Per cent	Number	Per cent	Number	Per cent
A	20	3.1	2	2.8	18	3.8
B	76	11.8	10	14.1	66	13.8
C	152	23.5	22	31.0	130	27.2
D	156	24.1	22	31.0	134	28.0
F	145	22.4	15	21.1	130	27.2
W	97	15.0	0	0.0	0	0.0

Of the six hundred forty-six students who enrolled in Mathematics 121 only two hundred forty-eight, or 38.4 per cent, finished the course with a C grade or better. This means that of the original Mathematics 121 enrollment 61.6 per cent either dropped the course or made a grade

below C. Over one-third, 37.4 per cent either failed the course or withdrew while one-fourth made a grade of D. These data characterize the grades assigned to students at Southeastern Louisiana College in the first course in general mathematics.

Of the four hundred seventy-eight freshmen students taking Mathematics 121 for the first time as their first college mathematics course, two hundred sixty-four, or 55.2 per cent, made either a grade D or an F. The mean semester score for these students was 60.4 per cent. The percentage range assigned by the faculty for a D in Mathematics 121 was from 50 per cent to 66.5 per cent. Thus, if one computes the mean grade-point average for this group by linear interpolation the result is 1.601 based on a total possible of 4.000 grade points.

The distribution of overall high school averages, high school mathematics averages, and high school English averages for group S is presented in Table II. A four point scale was used. A grade of A was represented by 4.000; a grade of B ranged from 3.000 to 3.999; a grade of C ranged from 2.000 to 2.999; and a grade of D ranged from 1.000 to 1.999. It will be noted that each of these grade-point averages is significantly higher than the grade-point average for this group in Mathematics 121. In each grade-point average in the distribution from 12 to 16

per cent of the individual averages were not available. In some cases the transcripts were not available, but in most such cases the grades were either not recorded or could not be interpreted in a meaningful way.

TABLE II

DISTRIBUTION OF HIGH SCHOOL GRADES FOR GROUP S

Grade	Subject or Subjects: Overall Average No.	%	Mathematics Average No.	%	English Average No.	%
A	2	0.5	12	2.8	18	4.5
B	112	26.7	94	22.3	102	25.4
C	239	56.9	206	48.8	181	45.1
D	67	15.9	110	26.1	100	25.0
F	0	0.0	0	0.0	0	0.0
Mean	2.621		2.353		2.462	
Standard Deviation	0.619		0.775		0.784	

The rest of this chapter is devoted to the presentation of data concerning the statistical relation between certain selected factors and success in Mathematics 121 for the members of set S. Success in Mathematics 121 was

generally measured in two ways: (1) the semester grade and (2) the final test grade.

II. MATHEMATICS 121 ACHIEVEMENT AS IT IS RELATED TO FACTORS IN THE HIGH SCHOOL BACKGROUND

The intercorrelation of Mathematics 121 and grades in high school are shown in Table III. The variables displayed in the table are defined as follows:

Variable 1 -- denotes the Mathematics 121 semester grade.

Variable 6 -- denotes the overall high school average.

Variable 7 -- denotes the high school mathematics average.

Variable 8 -- denotes the high school English average.

Variable 9 -- denotes the Mathematics 121 final test grade.

TABLE III

INTERCORRELATION OF MATHEMATICS 121 GRADES AND HIGH SCHOOL GRADE POINT AVERAGES

		Variables 6	7	8	9
Variables	1	.519	.540	.453	.901
	6		.818	.830	.518
	7			.655	.523
	8				.472

N = 319
P = .01

A correlation coefficient of .145 would be significant at the .01 level for population S. Hence, each of these grade factors is significant at the .01 level. These data suggest that grades in high school and in particular the grades in high school mathematics are strongly related to success in college general mathematics. The average in high school mathematics yields the highest correlation coefficient, .540, with respect to success in Mathematics 121. The next highest relation was the overall high school average which yielded a coefficient of .519. A correlation coefficient of .901 between the Mathematics 121 semester grade and the Mathematics 121 final examination grade is very high even considering the fact that the final examination is used to determine the semester grade.

The distribution of Mathematics 121 grades according to the selection of high school mathematics courses is shown in Table IV. The mathematics course patterns chosen by the students were classified as follows:

Pattern 1 -- Consists of four years of college preparatory mathematics.

Pattern 2 -- Consists of exactly three years of college preparatory mathematics.

Pattern 3 -- Consists of at least three years of high school mathematics with no more than two years of college preparatory mathematics.

Pattern 4 -- Consists of any course pattern not defined above.

TABLE IV

DISTRIBUTION OF MATHEMATICS 121 GRADES ACCORDING TO THE SELECTION OF HIGH SCHOOL MATHEMATICS COURSES

Grade	Course Pattern 1 No.	1 Per cent	2 No.	2 Per cent	3 No.	3 Per cent	4 No.	4 Per cent
A	4	11.7	10	6.9	2	1.6	1	0.8
B	11	32.4	29	20.0	8	6.3	12	10.0
C	10	29.4	59	40.6	27	21.2	21	17.5
D	8	23.5	29	20.0	43	33.9	37	30.8
F	1	2.9	18	12.4	47	37.0	49	40.8

N = 426
Chi-square = 70.95
P = .01

The following courses were regarded as college preparatory: (1) First Year Algebra, (2) Second Year Algebra, (3) Plane Geometry, (4) Trigonometry, (5) Solid Geometry, (6) Calculus, and (7) Advanced Algebra. This classification though somewhat arbitrary is in keeping with what is traditionally called college preparatory mathematics.

A Chi-square of 70.95 was computed on the basis of these data showing that the high school course pattern

was significantly related at the .01 level to achievement in Mathematics 121. Approximately 71 per cent of the students who selected course patterns 3 and 4 made below C in Mathematics 121 as compared to 26 per cent in pattern 1 and 32 per cent in pattern 2. Forty-four per cent of all students who chose course pattern 1 in high school made either an A or a B in Mathematics 121. This compares with 27 per cent who made above C in pattern 2, 8 per cent in pattern 3, and 11 per cent in pattern 4. This analysis suggests a strong relationship between course pattern selection in high school and success in general mathematics in college. It is possible, however, that the better students generally select course patterns 1 and 2. If this is the case it may be that the students who made the better grades in Mathematics 121 would have done so in any case.

The distribution of grades in Mathematics 121 according to the size of the high school attended is shown in Table V. The classifications of high schools according to size are defined below:

Class 1 -- Includes all high schools of more than 800 students.

Class 2 -- Includes all high schools having enrollments of 400 and above but less than 800.

Class 3 -- Includes all high schools having enrollments of 200 and above but less than 400.

Class 4 -- Includes all high schools having enrollments of 100 and above but less than 200.

Class 5 -- Includes all high schools having enrollments of less than 100 students.

TABLE V

DISTRIBUTION OF MATHEMATICS 121 GRADES ACCORDING TO THE SIZE OF HIGH SCHOOL ATTENDED

Grade	High School Size Classification									
	Class 1		Class 2		Class 3		Class 4		Class 5	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
A	4	3.5	6	4.1	5	5.3	2	6.5	0	0.0
B	10	8.7	28	19.1	9	9.5	4	12.9	1	5.0
C	32	27.8	36	24.5	31	32.6	9	29.0	5	25.0
D	33	28.7	35	23.8	26	27.4	10	32.2	7	35.0
F	36	31.3	42	28.6	24	25.3	6	19.4	7	35.0

N = 408
Chi-square = 8.830
P = .90

A Chi-square analysis of these data did not reveal any relationship between the size of high school attended and success in Mathematics 121. Indeed, the probability that this distribution would occur by chance sampling even if no relationship existed between these variables

is approximately .9.

III. MATHEMATICS 121 ACHIEVEMENT AS IT IS RELATED TO STANDARDIZED TEST SCORES

Table VI displays the intercorrelation of Mathematics 121 achievement and the scores on the American Council on Education Psychological Examination, the Cooperative Mathematics Pretest for College Students, and the New Purdue Placement Test in English. The variables exhibited in Table VI are defined below:

Variable 1 -- Is the Mathematics 121 semester grade.

Variable 2 -- Is the score on the American Council on Education Psychological Examination.

Variable 3 -- Is the Cooperative Mathematics Pretest for College Students.

Variable 4 -- Is the score on the New Purdue Placement Test in English.

Variable 9 -- Is the Mathematics 121 final examination score.

All the correlation coefficients shown in Table VI are significant at the .01 level. As one might expect the highest coefficient is the one which shows the relationship between The Cooperative Mathematics Pretest for College Students and success in Mathematics 121. The next highest was the one indicating the relationship between success in Mathematics 121 and the score on the

American Council on Education Psychological Examination.

TABLE VI

INTERCORRELATION OF MATHEMATICS 121 GRADES AND STANDARDIZED TEST SCORES

		Variables			
		2	3	4	9
Variables	1	.517	.588	.183	.901
	2		.485	.349	.501
	3			.247	.599
	4				.185

N = 319

The lowest coefficient represented the relationship between Mathematics 121 and the score on the New Purdue Placement Test in English. This coefficient of .183 was significant at the .01 level but it was barely so.

IV. MATHEMATICS 121 ACHIEVEMENT AS IT IS RELATED TO FACTORS IN COLLEGE EXPERIENCE

The strongest relationship seemed to exist between achievement in Mathematics 121 and the overall average at Southeastern Louisiana College in the fall of 1961. The overall average at Southeastern Louisiana College in the fall of 1961 gave the following coefficients:

1. With the semester grades in Mathematics 121, $r = .785$.

2. With the final examination mark in Mathematics 121, $r = .764$.

Thus, it appears that those who do well generally in their first semester tend to do well in mathematics. Both of these coefficients are significant at the .01 level.

The distribution of Mathematics 121 semester grades as related to distribution of grades earned in freshman English at Southeastern Louisiana College in the fall of 1961 is shown in Table VII. A Chi-square analysis of these data showed a highly significant relationship at the .01 level between Mathematics 121 achievement and achievement in freshman English at Southeastern Louisiana College. Of the ten students included in the study who made a grade of A in English, seven made either an A or a B in Mathematics 121. Two of these students made a grade of C; one made a D, and none failed. On the other hand, approximately 26 per cent of the students who made B in freshman English made a D or an F in Mathematics 121. Approximately 62 per cent of the students who made a D in English made either a D or an F in Mathematics 121. Sixty-three per cent of the students who failed freshman English failed freshman mathematics. Seventy-one per cent of the students who made below C in freshman English made below C in Mathematics 121.

Curriculum choice did not seem significantly related to achievement in Mathematics 121. One must note,

TABLE VII

DISTRIBUTION OF MATHEMATICS 121 GRADES AS RELATED TO GRADES EARNED IN ENGLISH AT SOUTHEASTERN LOUISIANA COLLEGE IN THE FALL OF 1961

Mathematics 121 Grade	English Grade A		B		C		D		F	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
A	2	20.0	8	15.1	5	3.4	1	0.7	1	1.0
B	5	50.0	17	32.1	29	19.7	10	7.0	2	2.1
C	2	20.0	14	26.4	54	36.8	43	30.3	13	13.5
D	1	10.0	11	20.8	42	28.6	54	38.1	19	19.8
F	0	0.0	3	5.6	17	11.5	34	23.9	61	63.6
Total	10	100.0	53	100.0	147	100.0	142	100.0	96	100.0

N = 448

however, that some choice has already been made by most students before they enrolled in the Mathematics 121 class. Students who wish to major in mathematics or one of the physical sciences and who qualify on the mathematics placement test skip Mathematics 121 and go directly into college algebra. Thus, the students in Mathematics 121 are, in the main, students whose choice of studies does not involve much mathematics. The total population T was divided into two groups. One group consisted of those students whose curricula included college algebra, and the other group consisted of those students whose curricula did not include algebra. A Chi-square analysis did not reject the null hypothesis at the .01 level.

The distribution of Mathematics 121 grades according to instructors is shown in Table VIII. A Chi-square analysis does not reject the null hypothesis. The probability that this distribution would occur even if no relation between choice of instructor and achievement in Mathematics 121 existed exceeds .50. Thus, one cannot conclude, on the basis of this study, that a random selection of instructors would have a great effect on the student's grade in Mathematics 121.

V. ACHIEVEMENT IN MATHEMATICS 121 AS IT IS RELATED TO AGE

The only variables which seemed significantly related

TABLE VIII

DISTRIBUTION OF MATHEMATICS 121 GRADES

ACCORDING TO MATHEMATICS 121 INSTRUCTOR

Grade	Mathematics 121 Instructor													
	1		2		3		4		5		6		7		8	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
A	6	8.2	1	2.8	2	2.7	4	6.0	0	0.0	0	0.0	2	2.8	2	3.6
B	8	11.0	5	13.9	6	8.1	9	13.4	7	19.4	11	17.7	11	15.5	8	16.1
C	18	24.7	16	44.4	21	28.4	16	23.9	12	33.3	18	29.1	12	16.9	16	28.6
D	23	31.6	8	22.2	22	29.8	17	25.4	3	8.3	20	32.3	26	36.6	14	25.0
F	18	24.6	6	16.7	23	31.1	21	31.4	14	38.9	13	21.0	20	28.2	15	26.8

Chi-square = 25.535
N = 475
$.50 < P < .70$

to age were the overall average in high school and the average in high school English. These coefficients were -.183 and -.193, respectively. It must be observed that the variation in age in the group to be studied was quite small. The mean age was 18.5 years and the standard deviation was 14 months. Hence, there is some question as to the statistical importance of these data.

VI. ACHIEVEMENT IN MATHEMATICS 121 AS IT IS RELATED TO THE SEX OF THE STUDENT

The distribution of Mathematics 121 grades according to sex is shown in Table IX. A Chi-square analysis of these data indicates a significance at the .05 level but not at the .01 level. The most significant feature of this table is the comparison of the percentage of above average grades made by male and female students. Approximately 23 per cent of the female students made either an A or a B in Mathematics 121 while only 12 per cent of the male students made grades above C. Approximately 30 per cent of the male students failed and approximately 25 per cent of the female students failed. About 59 per cent of the male students made a grade below C in Mathematics 121 as compared to 52 per cent of the female students.

TABLE IX

DISTRIBUTION OF MATHEMATICS 121

GRADES ACCORDING TO SEX

Grade	Sex			
	Male		Female	
	No.	Per cent	No.	Per cent
A	3	1.1	14	6.1
B	28	11.3	37	16.4
C	72	28.9	58	25.8
D	72	28.9	60	26.6
F	74	29.8	56	24.9
Total	249	100.0	225	100.0

N = 474
Chi-square = 9.56
P = .05

CHAPTER IV

SUMMARY AND CONCLUSIONS

I. ACHIEVEMENT IN MATHEMATICS 121

This study was concerned with achievement in general college mathematics and its possible relation to certain measurable factors.

The study resulted in definite and conclusive findings concerning achievement in Mathematics 121. Only 38 per cent of the original enrollees completed Mathematics 121 with a grade of C or above. Forty-five per cent of those students who completed the course and who were neither upperclassmen nor repeaters of Mathematics 121 made a grade of C or better. Hence, if one makes suitable assumptions concerning the population of this study and the nature of Mathematics 121, he may conclude that a randomly selected enrollee in college general mathematics at Southeastern Louisiana College has a probability of less than .50 of completing the course with at least a C grade.

II. ACHIEVEMENT IN MATHEMATICS 121 AS IT IS RELATED TO THE HIGH SCHOOL BACKGROUND

Achievement in Mathematics 121, when correlated

with the high school academic background, yields the following coefficients:

1. With the overall high school average, $r = .519$.
2. With the high school mathematics average, $r = .540$.
3. With the high school English average, $r = .453$.

All these relationships are significant at the .01 level. In this study academic success in high school seems to be the best measure of future success in general mathematics in college.

III. ACHIEVEMENT IN MATHEMATICS 121 AND THE SELECTION OF HIGH SCHOOL MATHEMATICS COURSES

This study reveals conclusively that those students who took at least three years of college preparatory mathematics were generally more successful in Mathematics 121 than those students who took fewer than three years of college preparatory mathematics. Seventy-one per cent of those students who took fewer than three years of college preparatory mathematics in high school made either a D or an F in Mathematics 121, while only 31 per cent of those who selected at least three years of college preparatory mathematics made below C in Mathematics 121. Thirty per cent of the students who took at least three years of college preparatory mathematics made either an A or a B in Mathematics 121, while only 9 per cent of those

who took less than three years of college preparatory mathematics made above a grade of C in Mathematics 121.

It is not clear from this study whether the students were better in general college mathematics because they chose more college preparatory mathematics or that they chose more college preparatory mathematics in high school because they were better students. In any case, it seems justifiable to suggest that counselors strongly advise college-bound students to select at least three years of college preparatory mathematics unless there are clear reasons why this should not be done in individual cases.

IV. ACHIEVEMENT IN MATHEMATICS 121 AS IT IS RELATED TO THE SIZE OF THE HIGH SCHOOL FROM WHICH THE STUDENT GRADUATED

This study did not lead to any significant conclusions regarding a relationship between the size of the high school attended and achievement in general college mathematics.

V. ACHIEVEMENT IN MATHEMATICS 121 AS IT IS RELATED TO SCORES ON STANDARDIZED TESTS

It seems clear from the results of this study that scores on the Cooperative Mathematics Pretest For College

Students, the New Purdue Placement Test In English, and the American Council on Education Psychological Examination all show relationship to success in Mathematics 121. When Mathematics 121 was correlated with the scores on these tests, the following coefficients were found:

1. With the Cooperative Mathematics Pretest For College Students, r = .588.
2. With the New Purdue Placement Test in English, r = .183.
3. With the American Council on Education Psychological Examination, r = .517.

VI. ACHIEVEMENT IN MATHEMATICS 121 AS IT IS RELATED TO SUCCESS IN FRESHMAN ENGLISH

Approximately 50 per cent of the students who made either an A or a B in freshman English made either an A or a B in Mathematics 121. Seventy-one per cent of those students who made either a D or an F in freshman English made below a grade of C in Mathematics 121. Twenty-four per cent of the students who made a grade above C in freshman English made below a grade of C in Mathematics 121. A Chi-square analysis demanded a rejection of the null hypothesis at the .01 level.

This study revealed no relationship between the choice of college curricula, the choice of college mathematics instructor, age of the student, and achievement in general college mathematics.

VII. CONCLUSIONS

The following conclusions were drawn on the basis of the findings of this study:

1. The expectation for success in general college mathematics at Southeastern Louisiana College for freshmen students who enroll in Mathematics 121 is low. The probability of making at least a C is less than .50.

2. Success in general mathematics is closely related to general academic success during the first semester in college.

3. Success in general mathematics in college is closely related to success in freshman English.

4. Students who chose at least three years of "college preparatory" mathematics in high school were significantly more successful in general college mathematics than those who chose less than three years.

5. Achievement in general college mathematics is closely related to general academic success in high school.

6. Achievement in general college mathematics is closely related to success in high school English.

7. Achievement in general college mathematics is closely related to success in high school mathematics.

8. In general, the grade-point average in high school mathematics is much higher than the grade-point average in general college mathematics.

9. Mathematics placement tests and the American Council on Education Psychological Examination are predictive of success in general college mathematics.

10. The size of the high school attended does

not appear to significantly affect the student's chances for success in general college mathematics.

11. The choice of college mathematics instructor does not seem to affect the student's chances for success in Mathematics 121.

12. Girls seem to do somewhat better than boys in general college mathematics. On the other hand, one must recognize the fact that a great many of the mathematically competent male students choose curricula which do not include general mathematics.

VIII. SOME FURTHER OBSERVATIONS AND RECOMMENDATIONS

This study revealed conclusively that the probability of success for a student enrolled in general college mathematics at Southeastern Louisiana College was quite low. Moreover, it showed that a number of well defined, measurable factors appear to be related to success in Mathematics 121. This suggests that further studies be made to show the nature of these relationships more precisely in an effort to predict success and also to provide for better course design and better articulation between high school and college mathematics.

The most important recommendation that this writer can make is that better communications be established between mathematics educators at the high school and college levels. This recommendation is not unrelated to others one might wish to make. Indeed, the implementation of any other recommendation is ultimately dependent on

how well this one is accomplished. If improvement in mathematics education is to be affected it must be done through the cooperative efforts of mathematics educators at all levels.

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AUTOBIOGRAPHY

AUTOBIOGRAPHY

Francis Gary Fournet, Jr., the youngest of the five children of Francis G. and May L. Fournet, was born in Natchitoches, Louisiana, on March 23, 1923. After graduation from Natchitoches High School in 1939, he entered Louisiana State Normal College. In 1943, he received a Bachelor of Science degree at Louisiana State Normal College. After graduation from that institution, he entered the Army of the United States and served for three years.

In 1946, he terminated his duties with the armed forces and entered Louisiana State University. He received a Master of Science degree in the Department of Mathematics of Louisiana State University in 1950.

He taught mathematics and science for three years at Ponchatoula, Louisiana. In 1952, he accepted a position at Humble Oil and Refining Company in Baton Rouge, Louisiana.

In 1953, he accepted a position as Supervisor of Teacher Training in Mathematics and Science at Southeastern Louisiana College in Hammond, Louisiana.

His present position is that of Associate Professor of Mathematics at Southeastern Louisiana College.

He is married to Marilyn Delcourt of Ponchatoula, Louisiana. Their four daughters range in age from eight to fourteen.

EXAMINATION AND THESIS REPORT

Candidate: Francis Gary Fournet, Jr.

Major Field: Education

Title of Thesis: A Study of Various Factors Related to Success in College General Mathematics

Approved:

L L Fulmer
Major Professor and Chairman

Max Goodrich
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Ralph D. Schmidt

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Hoyt D. Warner

Date of Examination:

July 29, 1963